

### **REMARKS**

Claims 1, 3-6, 8, 55-58, and 63-68 were pending. Claim 55-58, 65 and 66 has been cancelled. Claims 1, 4-6, 8 and 64 have been amended. Claims 69-73 have been added. Therefore, claims 1, 3-6, 8, 63-64, and 66-73 will be pending upon entry of the present amendment.

No new matter has been added. Support for the amendments to claim 1 and 64 can be found in the specification as originally filed, for example, at least at page 15, lines 3. Support for the amendments to claim 8 can be found, for example, at page 15, line 15. Claims 4-6 were amended to clarify the invention. Support for new claims 69-71 can be found in claims 4-6 and 8 as originally pending. Support for new claim 72 can be found in the claims as originally pending and in the specification, for example, at least at page 11, lines 2-3. Support for new claim 73 can be found in the claims as originally pending and in the specification, for example, at least at page 1, lines 30-37.

#### ***Rejection of Claims 1, 4-6, 8, 65 and 67 under 35 U.S.C. § 112, first paragraph***

Claims 1, 3-6, 8, 55-58 and 63 are rejected under 35 U.S.C. § 112, first paragraph, because "the claim(s) contain subject matter which was not described in the specification."

In particular, the Examiner objected to the inclusion of the language "greater than 25  $\mu\text{m}$ " and "greater than 200  $\mu\text{m}$ " in claims 1 and 65, respectively. Claim 1 has been amended such that this language is no longer recited. Claim 65 has been cancelled thus rendering its rejection moot.

Therefore, Applicant respectfully requests that this rejection of claims 1, 4-6, 8 and 67 under 35 U.S.C. § 112, first paragraph, be withdrawn.

#### ***Rejection of Claims 1, 3-5, 8, 64, and 67-68 under 35 U.S.C. § 102(b)***

Claims 1, 3-5, 8, 64 and 67-68 were rejected under 35 U.S.C. § 102(b) as being unpatentable over Ribí (U.S. Patent No. 4,859,538).

In claim 1 and its dependent claims, Applicant claims a method for forming a two-dimensional ordered crystalline structure of proteins. The method includes contacting a population of proteins with a gas-aqueous interface; laterally compressing said population to an appropriate pressure.

Claim 64 and its dependent claims are directed to a method for forming a three-dimensional ordered array of amphiphilic molecules. The method involves contacting a population of amphiphilic molecules with a gas-aqueous interface; and laterally

compressing said population to an appropriate pressure, such that a three-dimensional ordered array of said amphiphilic molecules is formed at the interface, and wherein the appropriate pressure is above a critical density point for the formation of a two-dimensional ordered array of said amphiphilic molecules.

Ribi describes a method for the synthesis of articles comprising at least one surfactant layer and at least one protein layer specifically bound to the surfactant layer through the use of a ligands. Ribi states through out the application that his invention "requires a specific binding between the ligand bound to the surfactant and the protein" (col. 4, lines 64-66). Ribi's protein layers are synthesized at an surfactant-aqueous interface by dissolving the protein in an aqueous medium and allowing the proteins to associate with the ligand/surfactant layer.

As described above, Applicant's claimed methods for the formation of two dimensional or three-dimensional ordered structures require the use of lateral compression and must occur at a gas-aqueous interface. Ribi's structures are not formed at a gas-aqueous interface, as claimed by Applicant, but at a surfactant-aqueous interface instead.

Therefore, Applicant respectfully requests that this rejection of claims 1, 3-5, 8, 64 and 67-68 under 35 U.S.C. § 102(b) be withdrawn.

***Rejection of Claims 6 and 63 under 35 U.S.C. § 103(a)***

Claims 6 and 63 are rejected under 35 U.S.C. § 103 (a) as being unpatentable over Ribi and further in view of Ohlsson (Biochemistry and Bioenergetics (1995) vol. 38, pp. 137-148).

Claims 6 is directed to a method as described above, wherein the proteins are applied to the interface in proteoliposomes, liposomes, or a cellular membrane. Claim 63 is directed to a method for forming a two- or three-dimensional ordered array of membrane proteins. The method includes contacting a population of membrane proteins with a gas-aqueous interface, wherein said population of membrane proteins are applied to said interface in a proteoliposome; and laterally compressing the population to an appropriate pressure.

As described above, Ribi *et al.* fails to teach a method for forming a two or three dimensional ordered array of membrane proteins at a gas-aqueous interface. Although according to the Examiner, Ohlsson describes that "cholera toxin may be bound to proteoliposomes on a surface," it does not overcome the deficiencies of the primary reference to teach the formation of two or three dimensional ordered arrays at the air-aqueous interface as claimed by Applicant. Ohlsson *et al.* describes lipid monolayers

fused with liposomes containing proteins on solid substrates and not air-aqueous interfaces as claimed by Applicant. Therefore, Applicant's claims are novel and unobvious over Ribí in view of Ohlsson *et al.*

Therefore, Applicant respectfully requests that this rejection of claim 6 and 63 under 35 U.S.C. § 103 (a) be withdrawn.

### SUMMARY

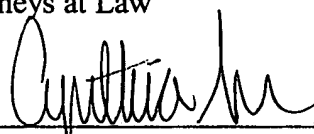
The cancellation of and/or amendment to claims should in no way be construed as an acquiescence to any of the Examiner's objections and/or rejections. The cancellation of/amendments to the claims are being made solely to expedite prosecution of the above-identified application. Applicant reserves the option to further prosecute the same or similar claims in the present or another patent application. The cancellation of and/or amendments to claims herein are not related to any issues of patentability.

It is respectfully submitted that this application is in condition for allowance. If there are any remaining issues or the Examiner believes that a telephone conversation with Applicant's Attorney would be helpful in expediting prosecution of this application, the Examiner is invited to call the undersigned at (617) 227-7400.

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